

What is claimed is:

1        A paper web handling apparatus wherein a paper web is continuously fed in a downstream direction of web travel from a utilization device comprising:

5        a slitler downstream of the utilization device that divides the web into at least a first and a second web ribbon, said web ribbons in side by side relation;

      a cutter located downstream of the slitler capable of transversely cutting the web ribbons;

10       a driven master roller that draws either the first or the second web ribbon at a speed related to that of the utilization device, said driven master roller adjacent to the cutter;

      at least one slave roller that draws the other of the first or the second web ribbon at a speed at least equal to that of the driven master roller, said slave roller adjacent to the cutter; and

15       a first turnbar assembly between the slitler and the cutter for shifting the second web ribbon laterally relative to the downstream direction to orient the second web ribbon in vertical alignment with the first web ribbon, one on top of the other, so they move through said cutter to be cut simultaneously.

2.       The apparatus as defined by claim 1, further comprising an adjustable take-up roller defining a detour in the path for the first web ribbon, said detour providing a path of the same length as a path length required for the second web ribbon.

3.       The apparatus as defined by claim 1 further comprising web braking means between the slitler and the utilization device.

4.       The apparatus as defined by claim 1 wherein the slave roller is driven at a speed greater than that of the master roller to assure that at least the first and second web ribbons are merged one on top of the other upon reaching the cutter.

5        5.        The apparatus as defined by claim 4 further characterized by an adjustable take-up roller defining a detour in the path for the first web ribbon, said detour providing a path from the slitter to the cutter of the same length as the path length required for the second web ribbon from the slitter through the first turnbar assembly to the cutter.

6.        The apparatus as defined by claim 1 wherein the first turnbar assembly comprises a single turnbar oriented at an angle relative to the downstream direction of web travel.

7.        The apparatus of claim 6 wherein the single turnbar is adjustable to vary the angle relative to the downstream direction of web travel.

8.        The apparatus as defined by claim 6 wherein the single turnbar includes circumferential perforations from which pressurized air supplied from an external source may escape, thereby reducing friction between the second web ribbon and the turnbar.

9.        The apparatus as defined by claim 8 wherein the second web ribbon wraps at least 180° about the single turnbar.

10.       The apparatus as defined by claim 8 wherein the second web ribbons wraps at least 350° about the single turnbar.

11.       The apparatus as defined by claim 1 further comprising  
a second slitter downstream of the utilization device such that the two  
slitters divide the web into first, second and third web ribbons, each of said web  
ribbons in side by side relation; and  
5        a second turnbar assembly between the slitter and the cutter for shifting the  
third web ribbon laterally relative to the downstream direction to orient the third  
web ribbon in vertical alignment with the first web ribbon.

40067559.030102

10067559, 030102

12. The apparatus as defined by claim 11 wherein  
the first turnbar assembly comprises a single turnbar oriented at an angle  
relative to the downstream direction of web travel; and  
the second turnbar assembly comprises a distinct single turnbar oriented at  
5 an angle relative to the downstream direction of web travel.

13. The apparatus as defined by claim 12 wherein each of the  
single turnbar and the distinct single turnbar is adjustable to vary the angle  
relative to the downstream direction of web travel.

14. The apparatus as defined by claim 12 wherein  
the second web ribbon wraps at least 180° about the single turnbar; and  
the third web ribbon wraps about the distinct single turnbar either 360°  
more or 360° less than the amount the second web ribbon wraps about the single  
5 turnbar.

15. The apparatus as defined by claim 14 wherein the second web  
ribbon wraps at least 350° about the single turnbar.

16. The apparatus as defined by claim 1 wherein the slitter and  
turnbar assembly are each independently bypassable such that the web will not be  
cut by the slitter nor merged one on top of the other.

17. The apparatus as defined by claim 1 further including a  
mechanism to register travel of the web by sensing a perforated margin on the  
web, said mechanism bypassable so that pinless web may be processed through  
said apparatus.

18. In a web handling apparatus wherein at least a first and a second web ribbons are continuously fed in a downstream direction and merged one above the other, the improvement comprising:

a master drive roller in continuous contact with said first web ribbon and drawing said first web ribbon in said downstream direction; and

a slave roller driven at a rotational speed in excess of that of said master drive roller, said slave roller in slipping contact with said second web ribbon and drawing said second web ribbon in said downstream direction.

19. The improvement as defined by claim 18 further comprising:

a turnbar roller angled relative to said downstream direction, one of said first or second web ribbons passing at least 270° about said turnbar roller to merge one of said ribbons one above or below the other prior to contact with either of said master drive roller or said slave roller.

20. The improvement as defined by claim 19 wherein said turnbar roller includes perforations about at least a portion of an arcuate surface thereof through which pressurized gas from an external source escapes, thereby reducing friction between said turnbar roller and said first or second web ribbon.

21. A web handling apparatus capable of processing a web of the pinless variety, wherein a continuous web moves in a downstream direction from an upstream utilization device, comprising:

$n$  slitters that divide at least a portion of the continuous web into a plurality

$n$  of continuous web ribbons;

a master drive roller driven at a rotational speed  $R$  and in continuous contact with a primary web ribbon, and drawing said primary web ribbon in a downstream direction;

at least  $\frac{n-1}{2}$  slave rollers where  $n$  is an odd number, or at least  $\frac{n-1}{2} + \frac{1}{2}$

where  $n$  is an even number, each slave roller driven at a rotational speed greater than  $R$ , each said slave roller in slipping contact with one of the web ribbons except the primary web ribbon, and drawing said web ribbon in slipping contact in a downstream direction; and

a plurality of  $n-1$  turnbar rollers each defining an angle relative to said downstream direction, each individual web ribbon except one of them passing at least  $270^\circ$  about a turnbar roller to merge said ribbons one above the other prior to contact of said web ribbon with either said master driven roller or one of said slave rollers;

wherein  $n$  represents a whole number greater than 1.

22. The web handling apparatus as defined by claim 21 wherein at least one of the plurality of  $n-1$  turnbar rollers include perforations on an arcuate surface thereof through which a pressurized gas from an external source may escape, thereby reducing friction with said web ribbon passing at least  $270^\circ$  thereabout.

23. The web handling apparatus as defined by claim 21 wherein at least one of said turnbar rollers is adjustable to define one of a plurality of possible angles relative to said downstream direction.